**Technology Integration in the Classroom**

CBSE 7201T- Seminar in Applied Theory and Research 1

Brooklyn College

Alexa Sbordone

December 2016

**Table of Contents**

Abstract…………………………………………………….……………………………………3

Introduction

* Statement of the Problem:……………………………………………………………….3
* Review of Related Literature:…………………………...………………………………4
* Statement of the Hypothesis:…………………………………………………………..12

Method

* Participants (N):……………………………………………………………………….12
* Instrument(s):………………………………………………………………………….13
* Experimental Design:
* Procedure:

Results:

Discussion:

Implications:

References:…………………………………………………………………………………… 13

Appendix (ces):

* Appendix A, Parental Consent Form ….………………………………………………16
* Appendix B, Principal Consent Form ………………………………..………………..17

**Abstract**

**Introduction**

**Statement of the Problem:**

Before we can discuss how to shift our pedagogy or the role of the teacher in a classroom that is integrating technology, it is important to first define what "technology integration" actually means. Seamless integration is when students are not only using technology daily, but have access to a variety of tools that match the task at hand and provide them the opportunity to build a deeper understanding of content (“Technology integration,” 2007).

Emerging technologies have become increasingly embedded in urban adolescents’ lives, as shown by the time teenagers spend in virtual space, juggling multiple devices and software applications. It is evident that technology is embraced by teenagers as an indispensable part of their lives and culture (Li, Snow, & White, 2015). As technology rapidly grows in our country and all over the world, it is important that it is being integrated in classrooms, of all ages.  Our students were born into this media driven society, and educators should be keeping up with it in the curriculum. Instead of disregarding this new era of technological development and the various possibilities that this development has opened up, educators, education policy makers, teachers and the civil society as a whole need to take advantage of this situation to create a technology-enhanced language learning environment (Zyad, 2016). The challenge, of course, is finding ways to use technology and how to help students use it.  It is also significant that the technology is being taught or used within the lesson and not separated. Teachers should teach information literacy by integrating it into an inquiry project for a subject learning instead of teaching it separately (Wang, Ke, Wu, & Hsu, 2012). In my school, technology is available as a resource, but teachers are not taught how to use it, therefore it is not used. I try to incorporate technology in my lessons, but for the purpose of this study I am going to fully implement it into my daily lessons to benefit students. Recent evaluation studies suggest that instructional technology is thriving in this climate and that computers can also make teaching more effective in elementary and secondary schools (Kulik, 2003).

A challenge might be that the students will be distracted by technology. Children in this generation know how to use all of this fancy equipment better than anyone, because they were born into this age and do not know a world without it. Recent research has shown that young people have adopted technology more rapidly and more universally than adults (Li, Snow, & White, 2015). It is our job to teach them how to use it academically and purposefully. Technology tools must be used selectively and appropriately to supplement teaching (Keengwe & Hussein, 2014).

**Review of Related Literature:**

**Pros**

Research has indicated that technology can increase student motivation, attitude, engagement, and self-confidence, while improving organization and study skills (Carver, 2016). One of the first and many abilities that teachers want to achieve in their classroom is a high student engagement. If your students are engaged, it shows that they are eager to learn and that the teacher has their attention and focus. Student engagement is key in the classroom, especially in elementary schools where the students are at a younger age and it is hard to keep their attention for longer periods of time, without having something to grasp their minds. Technology is the most modern way for teachers to engage and motivate students. Students, at all ages, are very familiar with technology, they know how to use it and they want to use it. Introducing technology in the classroom can be both a helpful and useful tool to stimulate student learning and success.

With both the Common Core Standards and the No Child Left Behind Act (NCLB) in place, when you walk into any classroom, you will observe various forms of differentiation to meet the needs of all students. Usually when hearing the term “Interactive White Board” (IWB) many educators see this as a whole class learning experience. In a study completed in 2009, the participants differentiated the learning process, with IWB’s and only the half of the lesson time was dedicated to whole-class learning (Blau, 2011). This gave the opportunity to use the rest of the lesson time with smaller groups and individualized learning support. Teachers have to find and utilize resources in order to aid their students in meeting the standards at their own individualized level. While scaffolding and other strategies have been used for decades, we can now use technology as an instrument to differentiate in the classroom. Computers can help individualize instruction, which some people see as a way to help ensure that every student is getting the most out of being in school, without either being held back by the slower pace of others in the class or getting lost as the class zooms ahead (“There’s no disputing,” 2015). Technology can serve as the extra hands needed in the classroom, as with one teacher, they only have two hands and can only be working with so many students at a time. If a student can be guided and then sent to work independently, while a teacher is working with another group of students, we are getting the most out of the hours being spent in school. Teachers

allocated significantly less time for whole-class instruction and had students spend significantly more time working either individually or in pairs as they used their technology (Caranikas-Walker, Huntsberger, Maloney, Shapley, Sheehan & Sturges, 2006).

Another significant element of the Common Core Standards is that they were explicitly designed around the goal of ensuring college and career readiness for all students. Preparing students for the workforce is an area where technology plays a pivotal role in helping school communities reach their educational goals (Cradler, McNabb, Freeman, & Burchett, 2002). Research shows that when students learn to use and apply applications used in the world of work, such as word processors, spreadsheets, computer-aided drawing, Web site development programs, and the Internet, they acquire some of the prerequisite skills for workforce preparedness (Cradler, McNabb, Freeman, & Burchett, 2002). If technology is assisting students and teachers with meeting college and career readiness goals, then it is obviously assisting in meeting the rigorous common core standards, which will result in better student achievement and knowledge in both literacy and math.

New York City has a widely diverse population of people. New York City public schools reflect this population. English-language learners (ELL) consist of the fastest growing percentage of the overall student body (Keengwe & Hussein, 2014). Over the past few years, in New York City, the population of ELL’s in public schools was over 10%. In 1979 to 2003, the ELL students increased by 124%, while other student populations increased by 19% (Keengwe & Hussein, 2014). A study completed in 2009, with ELL students showed that students using technology as curriculum supplement were more likely to achieve than students who did not use computer assisted classroom. In other words, students who had computer assisted program had a greater chance of closing achievement gap and meeting NCLB requirements than students who did not use computer aid curriculum (Keengwe & Hussein, 2014). The students that used computer assist classroom instruction gained scores in reading and math (Keengwe & Hussein, 2014).

During a series of studies completed in the early 1990’s results from the overall picture that emerges from these studies is positive. None of the studies found that technologies had a negative effect on students. It has become clear during the past decade that computers can be valuable tools in improving writing skills (Kulik, 2003).

Some see a great opportunity for teachers to expand their students’ horizons by drawing on the vast resources of the Internet to supplement classroom lectures and discussion (“There’s no disputing,” 2015).

**Cons**

As with most aspects of life, there are pros and cons, so it is the consistent with integrating technology in the classroom. While many education experts tout the advantages of incorporating technology into the school curriculum and the classroom, technology can sometimes hinder learning and the educational process (Guru, n.d.). Technology is ever changing, therefore can be a scary thought for life, both inside and outside of schools. Technology is changing education, but the most important interaction in the classroom will remain the face-to-face interaction between teachers and students (“There’s no disputing,” 2015). This personal interaction has been at the heart of teaching students how to think, and technology often interferes with that education, rather than enhancing it (“There’s no disputing,” 2015). Many believe that technology might be taking control of the classroom and even in some situations, taking place of the teacher. This is not what we want in our classrooms, we want technology to aid us and complement our abilities to educate the future of our country.

Another noteworthy debate in incorporating technology in the classroom is the expense and money it requires. Many schools, especially in low economical areas, cannot afford to purchase technology or enough technology for the whole school to use. We are very limited in recourses in most schools and have to do our best to use what we have, when it is available. Our request for iPads, perhaps not surprisingly, was immediately turned down. It was too expensive, the Exceptional Children Department said (Bricker, 2015). Although it may not be always possible to have technological tools for everyone individually, in most cases we have this gear to share. As an alternative to a one-to-one initiative, some schools have purchased mobile laptop carts, or computers on wheels. These carts of 5 to 25 mobile computers are typically wireless and can be wheeled from classroom to classroom as needed (Grant, Ross & Wang, 2005). So while we may not have access to these all day, everyday, we can take advantage of the time we do have. Equipment availability, more than any other factor, seemed to have the greatest impact on whether technology was incorporated into classroom instruction (Carver, 2016). If the equipment is not available, it seems impossible to use it during lessons in the classroom. Because schools occasionally purchase technology before their systems and educators are adequately equipped for and trained to use it effectively, technology sometimes goes unused or actually prevents student learning (Guru, n.d.). So while some schools may have the means to purchase these resources, they may not be using it effectively.

Some issues discussed in the results of this study were the level of software use, classroom management, facilitation during software use and articulation and integration of instruction with and without software (Means, 2010). Although we use technology as an engagement factor in the classroom, we find that it can also be a distracting one. It is important that the students have the right devices, guidance and supervision when technology is being used. Teachers need to be sure that however these resources are being used, that it is for educational purpose and ensuring effectiveness.

**Theorists**

The theory of multiple intelligences was developed in 1983 by Dr. Howard Gardner. Dr. Gardner proposes eight different intelligences to account for a broader range of human potential in children and adults. The eight intelligences are verbal-linguistic, logical-mathematical, visual-spatial, musical, naturalistic, bodily-kinesthetic and interpersonal (“Many educators,” 2016).

The two that can apply to technology integration in the classroom are visual- spatial and interpersonal. Visual- spatial intelligence is where students can use visuals, drawings, pictures or videos, as a learning tool, which could be aided by technology. Interpersonal intelligence is where students understand by interacting with others. These students learn through interaction with tools including computers, laptops, ipads or smart boards.

The use of technology in education is here to stay. Technological advances will not only make our lives easier, they will change the way we live and think, and while it will be later rather than sooner, this will happen in our classrooms too. As educators, it is our responsibility to stay abreast of technology by discovering new and innovative ways to develop and present curriculum. Through this realization, we will better ascertain how to employ technology in creative new ways while using Gardner's Multiple Intelligence theory to help our students succeed.

The use of technology should not occur without thinking about how people learn. The presentation of new programs, applications, software, and technology related activities provided to our students will only prove to be of value if we coordinate the use of technology with the needs of the learner. (Jackson, Gaudet, McDaniel & Brammer, 2009)

John Dewey is most famous for his role in what is called progressive education. Progressive education is essentially a view of education that emphasizes the need to learn by doing. Dewey believed that human beings learn through a 'hands on' approach. This approach is where students must interact with their environment in order to adapt and learn.  Students can interact with technology, while using a hands on approach to make achievements in the classroom. Interactive technology, such as ipads and smart boards, will enhance student engagement and motivation, as well as achievement.

Bloom's Taxonomy was created in 1956 order to promote higher forms of thinking in education, such as analyzing and evaluating concepts, processes, procedures, and principles, rather than just remembering facts. Integrating Bloom’s Taxonomy with technology into curriculum creates more ways to deliver information and creates engaging ways for students to interact with that information (Signal, 2015). Technology also offers students a variety of methods to prove that they have met specific learning objectives (Signal, 2015).

**Implementations**

There is an endless variety of ways we can implement with technology in the classroom. Technology has become integrated in the classroom in so many ways, that we often don't even think about how we are using it (Starr, 2011). Just using the internet alone, gives teachers millions of ways and resources to incorporate new strategies into learning. Some examples are iPads, laptops, smart boards, tablets, and Google’s resources. The rapid adoption of iPads and other tablet devices by schools creates a new opportunity to use the technology in early literacy skill development (Northrop & Killeen, 2013).

SMART Board is a technology that combines the functionality of a whiteboard, computer, and projector into a single system (Giles & Shaw, 2011). Many schools now are being provided with the money or grants for this equipment to be installed in classrooms. The current school that I am employed in has one board in every classroom. SMART Boards are an effective means of augmenting typical teaching strategies to make learning more motivational and meaningful for the internet savvy, technologically advanced youngsters who populate the elementary classrooms (Giles & Shaw, 2011). When a group of kindergarten students used the SMART Board as an instructional tool, their enthusiasm was obvious and their interest was evidenced by their rapt attention (Giles & Shaw, 2011). Smart boards are being used across all discipline areas to enhance student achievement and scores.

An elementary school launched a pilot laptop program designed to determine the impact of changing the ways students learn and teachers instruct in a technology-enhanced learning environment. At the beginning of the school year, students thought typing skills were a problem, preventing or slowing the use of the laptops. However, at the end of the year, the students did not include this with their challenges in using the laptops or with the students they felt benefited most from the laptops’ use (Grant, Ross & Wang, 2005).

The use of the collaborative writing and research possibilities with Google Document and the Google Spreadsheet, would have a major impact on reading, writing, speaking, and listening. These two simple tools are an innovation for education (Loertscher, 2011). Technology does improve literacy learning in the classroom, as well as test scores.

Three students with moderate intellectual disabilities were selected based on their IEP objectives for increasing functional sight word vocabulary. During this implementation, multiple technologies were used for observation. Words were presented individually to students on PowerPoint slides using the SMART Board. The study evaluated the use of a large screen, interactive computer program to deliver instruction in a small group arrangement. Computer-assisted instruction has been demonstrated to be an effective means for delivering instruction to students with disabilities in one-to-one arrangements (Mechling, Gast, & Krupa, 2007).

**Statement of the Hypothesis:**

Implementing instructional technology to 30 second grade students, three times a week for forty-five minutes over six weeks in the morning, at a New York City Public School in Brooklyn, New York, will increase overall student literacy test scores.

**Method**

**Participants:**

The participants will consist of a group of 30 students from P.S. X, a public school in, Brooklyn, New York. The class chosen will be a second grade class studying literacy, where the students range from 7 to 8 years old. Many students are English Language Learners (ELL), but none of the students were evaluated for an Individualized Education Program (IEP).

**Instruments:**

The researcher will require permission from the principal and will then send a consent form to the classroom parents explaining the action research. The purpose of my project is to find out whether integrating technology in the classroom during the ELA block improves overall literacy scores. The students will be observed prior to technology rich instruction and will complete a pre-test. After observing students throughout the technology rich-infused instruction three times a week, for forty-five minutes, over six weeks, I will conduct a and post-test. Students will then complete a survey.

**Experimental Design:**

**Procedure:**

**Results:**

**Discussion:**

**Implications:**

**References:**

# (2007, November 5). What Is Successful Technology Integration? [Web log]. Retrieved from https://www.edutopia.org/technology-integration-guide-description

# (2015, May 10). Does Technology Belong in Classroom Instruction? *The Wall Street Journal.* Retrieved from <http://www.wsj.com/articles/does-technology-belong-in-classroom-i> instruction-1431100454

(2016, July 20) Multiple Intelligences: What Does the Research Say? Retrieved from [http://www.edutopia.org/multiple-intelligences-research](%09http://www.edutopia.org/multiple-intelligences-research)

Blau, I. (2011). Teachers for "Smart Classrooms": The Extent of Implementation of an Interactive Whiteboard-based Professional Development Program on Elementary Teachers' Instructional Practices. *Interdisciplinary Journal of E-Learning & Learning Objects, 7 (7275-289,* 1-16*.*

Bricker, V. (2015). iPads for Access, Independence, and Achievement. *Odyssey: New Directions In Deaf Education*, 1610-13.

Caranikas-Walker, F., Huntsberger, B., Maloney, C., Shapley, K., Sheehan. D., Sturges, K.   (2006) Effects of Technology Immersion on Teaching and Learning: Evidence from Observations of Sixth-Grade Classrooms. *Texas Center for Educational Research*.

Carver, L. B. (2016). Teacher Perception of Barriers and Benefits in K-12 Technology Usage. *Turkish Online Journal Of Educational Technology - TOJET, 15(1),* 110-116.

Cradler, J., McNabb, M., Freeman, M., & Burchett, R. (2002). How Does Technology Influence Student Learning?. *Learning & Leading With Technology*, 29(8), 46-49,56.

Giles, R. M., & Shaw, E. L. (2011). SMART Boards Rock. *Science And Children*, 49(4), 36-37.

Grant, M. M., Ross, S. M., & Wang, W. (2005). Computers on wheels: an alternative to ‘each one has one’. *British Journal Of Educational Technology*, *36*(6), 1017-1034.

Guru, C. (n.d.) The Disadvantages of Technology in Classroom. [Web log]. Retrieved from http://www.eslteachersboard.com/cgi-bin/tech/index.pl?read=136

Jackson, A., Gaudet, L., McDaniel, L., & Brammer, D. (2009). Curriculum Integration: The Use of Technology to Support Learning. *Journal Of College Teaching & Learning*, 6(7), 71- 78.

Kalota, F., & Hung, W. (2013). Instructional Effects of a Performance Support System Designed to Guide Preservice Teachers in Developing Technology Integration Strategies. *British Journal Of Educational Technology*, *44(3),* 442-452

Keengwe, J., & Hussein, F. (2014). Using Computer-Assisted Instruction to Enhance evement of English Language Learners. *Education And Information Technologies, 19(2*), 295-306.

Kulik, James A. (2003). “Effects of Using Instructional Technology in Elementary and Secondary Schools: What Controlled Evaluation Studies Say” *SRI Project Number P10446.001*: SRI International. Web. 8 Sept. 2016.

Lewis, D. H. (2012, January 1). Enhanced One-to-One Technology Integration through Elementary Teachers' Technological, Pedagogical, and Content Knowledge. *ProQuest LLC*.

Li, J., Snow, C., & White, C. (2015). Teen Culture, Technology and Literacy Instruction: Urban Adolescent Students' Perspectives. *Canadian Journal Of Learning And Technology, 41(3*).

Loertscher, David V. "Unleash the power of technology in education." *Teacher Librarian* 39.1(2011): 46+. *Academic OneFile*. Web. 8 Sept. 2016.

Means, B. (2010). Technology and Education Change: Focus on Student Learning. *Journal Of Research On Technology In Education, 42(3),* 285-307.

Mechling, L. C., Gast, D. L., & Krupa, K. (2007). Impact of Smart Board Technology: An Investigation of Sight Word Reading and Observational Learning. *Journal Of Autism And Developmental Disorders*, *37(10),* 1869-1882.

Northrop, L., & Killeen, E. (2013). A Framework for Using iPads to Build Early Literacy Skills. *Reading Teacher, 66(7*), 531-537.

Signal, M. (2015). Bloom's Taxonomy and Technology Integration. <http://www.brighthubeducation.com/teaching-methods-tips/111749-integrating-blooms-t> taxonomy-and-technology-into-curriculum/

# Starr, L. (2011). Technology Integration Ideas That Work. [Web log] Retrieved from http://www.educationworld.com/a\_tech/tech/tech176.shtml

Wang, C., Ke, Y., Wu, J., & Hsu, W. (2012). Collaborative Action Research on Technology Integration for Science Learning. *Journal of Science Education & Technology, 21(1),* 125-132.

Zyad, H. (2016). Integrating Computers in the Classroom: Barriers and Teachers' Attitudes. *International Journal Of Instruction*, 9(1), 65-78.

Appendix A: **Parental Consent Form**

Dear Parent/ Guardian,

My name is Alexa Sbordone and I am currently a graduate student in the Childhood Education Master's Program at Brooklyn College. This semester, I am working on an Action Research Project. The purpose of my project is to find out whether integrating technology in the classroom during the ELA block improves overall literacy scores. Over a period of six weeks, I will observe our class, including your child, and implement strategies using various technological resources. The tests your child will be taking will not affect your child’s school grades in any way. Any information that can be identified with your child will remain confidential and will not be disclosed. All of the lessons will be administered during your child’s scheduled classroom instruction, and all standards will be addressed and accomplished.

In order to ensure success in my research, I am requesting your permission to use your student’s data for my study. If you have any questions or concerns, please feel free to contact me via email at asbordone@schools.nyc.gov or by cell phone at (917) 664-\*\*\*\*.

Thank you in advance for your support!

Sincerely,

Alexa Sbordone

Student’s Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Yes, I give my child permission to take part in the research study.

No, I do not give my child permission to take part in the research study.

Parent Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_

Appendix B: **Principal Consent Form**

Dear Principal,

I am currently a graduate student in the Childhood Education Master's Program at Brooklyn College. This semester, I am working on an Action Research Project. The purpose of my project is to find out whether integrating technology in the classroom during the ELA block improves overall literacy scores. Over a period of six weeks, I will observe my class (grade 2), and implement strategies using various technological resources. All information and students’ names will remain confidential and anonymous. The school will not be disclosed. This research will require that I select and observe my second grade students, as well as acquiring parental permission to help gather data.

In order to successfully conduct my research, I am requesting your permission to use my second grade class for my research study. If you have any questions or concerns, please feel free to contact me via email at asbordone@schools.nyc.gov or by cell phone at (917) 664-\*\*\*\*. I will be glad to share my findings with you.

Thank you in advance for your support!

Sincerely,

Alexa Sbordone

Principal’s’ Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_